RECEIVED
CENTRAL FAX CENTER

MAY 0 9 2007

REMARKS

Claims 1, 7, 13, 19, 25 and 31 have been amended to further define the isocyanate-reactive component and to incorporate the subject matter of Claims 6, 12, 18, 24, 30 and 36, respectively, into the amended claims. Support for the amendment which defines the isocyanate-reactive component as a polyether polyol having an equivalent weight of less than 200 and a functionality of 2 to 8 can be found on page 12, lines 2-3 and as a compound having a molecular weight of from 105 to 400 and an equivalent weight of from about 31 to less than about 100 and containing from 2 to 4 hydroxyl groups can be found on page 12, lines 7-9.

Claims 6, 12, 18, 24, 30 and 36 have been cancelled as the subject matter of these claims has been incorporated into the respective independent claims.

The amendments to Claims 3, 9, 15, 21, 27 and 33 serve to correct an inadvertent typographical error.

Applicants respectfully submit that no new matter has been added by the preceding amendment.

Claims 1-5, 7-11, 13-17, 19-23, 25-29 and 31-35 were rejected under 35 U.S.C. § 103(a) as being unpatentable over the Wynnyk et al reference (U.S. Published Application 2004/0016276) in view of the Moore reference (U.S. Patent 4,804,403).

Controlled release fertilizers having improved mechanical handling durability and a method of the production of these controlled release fertilizers is disclosed by U.S. Published Application 2004/0016276 (the Wynnyk et al reference). These controlled release fertilizers comprise a particulate plant nutrient surrounded by a protective coating which comprises a particulate filler. In addition, there is preferably a release control coating beneath the protective coating. This release control coating serves to provide controlled release properties in the fertilizers. The release control coating and the protective coating may be the same or different, and when these are the same, one coating functions to provide both the controlled release properties and the protective properties.

Attrition-resistant, controlled release fertilizers are described by the Moore reference (U.S. Patent 4,804,403). These fertilizers comprise a water soluble mass containing a nucleophilic reactive functional group surrounded by and chemically bonded to a base coating, and a water-insoluble layer which surrounds and is chemically bonded to/with the base coating. The base coating is formed by reacting a molecular excess of coupling agent with the nucleophilic groups of the central particles. The water-insoluble layer is formed by reaction and polymerization with/to the excess functional groups of the coupling agent. See column 2, lines 48-63. Suitable coupling agents for the base layer include isocyanates, particularly when the nucleophilic functional groups of the central mass are NH_2 groups, i.e. urea groups (column 2, line 65 through column 3, line 5). Polyols are suitable materials for the sealing layer as these chemically bond with the isocyanate groups of the coupling agent to form a sealing layer (column 3, lines 6-15).

Applicants respectfully submitted that the presently claimed invention is not rendered obvious by the Wynnyk et al reference in view of the Moore reference.

The Wynnyk et al reference discloses the controlled release fertilizer materials which comprise a particulate plant nutrient surrounded by a protective coating. The protective coating comprises the particulate filler, and preferably, a release control coating beneath the protective coating to provide the desired controlled release properties of the fertilizer materials. The protective coating and the release control coating may be the same or different, and polyurethane type protective coatings are preferred. The particulate material(s) may be added to a polyol (e.g. castor oil, oleo polyol, etc.) or mixture of polyols, which is then reacted with an isocyanate or mixture of isocyanates to produce a coating which is less susceptible to damage during the mechanical handling of the fertilizer.

This reference further discloses that the particulate material may be added to the isocyanate or to a mixture of polyol(s) and isocyanate(s), or in conjunction with other non-reactive materials which modify the release profile. Other such materials include wax, petroleum oil, bitumen, coal products, natural oils, pulp and paper products, etc, which are premixed with the polyol. (See page 2, paragraph 0020 of the Wynnyk et al reference).

Applicants respectfully submit that one of ordinary skill in the art has no insight into the presently claimed invention upon reading the Wynnyk et al reference. In spite of the broad disclosure of this reference, it is readily apparent from the working examples therein that the particulate filler is always added to the polyol component and this is then applied simultaneously with the isocyanate component to the particulate plant nutrient (i.e. urea). Examples 1 and 2 of this reference are comparative examples which do not contain a particulate filler, and Examples 3-6 are representative of the invention described therein.

In Example 3 of the Wynnyk et al reference, urea fertilizer particles are coated simultaneously with (1) a C_{30+} alpha olefin wax (i.e. the organic additive) in castor oil and (2) isocyanate to form two layers, and then forms two additional layers by applying (1) a mixture of urea dust (i.e. the particular filler) in castor oil and (2) an isocyanate. Figure 3 shows the results of the release rate in water before and after the paint shaker test.

In Example 4, urea fertilizer particles are simultaneously coated with (1) a mixture of pea starch (i.e. the particulate filler), a C_{30+} alpha olefin wax (i.e. the organic additive) and castor oil, and (2) an isocyanate. Then, two additional layers of the same composition are applied. Figure 4 shows the results of the release rate in water before and after the paint shaker test.

In Example 5, the fertilizer particles are coated by simultaneously applying (1) a mixture of phosphogypsum (particulate filler) with a C_{30+} alpha olefin wax (organic additive) and castor oil, and (2) an isocyanate. Four identical layers of this coating are applied to the fertilizer particles. Results of the release rate in water for these particles is shown in Figure 5, both before and after the paint shaker test.

The coating on the fertilizer particles in Example 6 were formed by simultaneously applying (1) a mixture of phosphate rock dust (particulate filler) in a C_{30+} alpha olefin wax (organic additive) and castor oil, with (2) an isocyanate. Three identical layers are then applied. The results of the release rate of these particles in water is shown in Figure 6, both before and after the paint shaker test.

It is respectfully submitted that Examples 1 and 2 of the Wynnyk et al reference are not particularly relevant to patentability of the present invention and will therefore, not be further discussed except to state that these are not relevant as neither example included the addition of a particulate filler in any form or manner to the coated fertilizer particles. The remaining examples of this reference, as discussed above, all included both an organic additive and a particulate filler in combination with the polyol component (i.e. castor oil) to form a mixture which was applied to the fertilizer particles at the same time an isocyanate component was applied to the fertilizer particles. Upon reading these examples, one of ordinary skill in the art would clearly expect that any filler, inert or otherwise, should first be mixed or blended with the polyol component (or isocyanate) and this blend should be simultaneously applied with the isocyanate (or polyol component) to the fertilizer particles. As illustrated in Examples 3-6 of the Wynnyk et al reference, this obviously works when an organic additive such as the C_{30+} alpha olefin wax is present and added to the same reactive component (i.e. polyol or isocyanate).

Applicants submit that the present invention does not contain an organic additive such as this C_{30+} alpha olefin wax required by the Wynnyk et al reference. It is readily apparent from the working examples of the present application that in the absence of such an organic additive, it is no longer possible to add or blend the particulate filler with the polyol component or with the isocyanate component and apply either of these blends or mixtures to the fertilizer particles. As demonstrated by Examples 7, 11, 13 and 15 in the table on pages 20 and 21 of Applicants' specification, these blended components result in thick pastes and are not usable. See page 22, lines 1-3 of the present specification.

One of ordinary skill in the art, however, has no insight into this fact upon reading the Wynnyk et al reference. To the contrary, the skilled artisan would expect and in fact believe that such blends of the particulate filler and either the polyol or the isocyanate would be preferred. This is clearly not true.

Applicants further submit that once it is apparent to the skilled artisan that it is not possible to blend the particulate filler with either the polyol component or with the isocyanate component and form a blend suitable for application to fertilizer particles,

the skilled artisan would believe that the organic additive (e.g. the C_{30+} alpha olefin wax) is critical. However, this is clearly not so. Applicants have found that suitable slow release fertilizers can be prepared in the absence of an organic additive as required by the Wynnyk et al reference by applying the three components (particulate filler, polyol component and isocyanate component) to the fertilizer particles as three separate streams, in any order. One of ordinary skill in the art would not expect this to be possible, without an organic additive such as the C_{30+} alpha olefin wax.

Only after reading Applicants' specification does it become "obvious" to proceed in the necessary manner to "arrive at" the presently claimed invention. Such a perspective does not, however, provide a proper basis for a rejection under 35 U.S.C. 103(a). Accordingly, the presently claimed invention is not properly rejected as being obvious over the Wynnyk et al reference. It is respectfully requested that this rejection be withdrawn.

In addition, combining the Moore reference (U.S. Patent 4,804,403) with the Wynnyk et al reference also does not fairly suggest the presently claimed invention to one of ordinary skill in the art.

It is disclosed by the reference that inert powders such as wollastonite, lime, silica, dolomite and rouge may be used as diluent fillers (column 8, lines 3-4). This reference also discloses that finely divided plant nutrients, i.e. micronutrients, may be used as diluent fillers in the sealing layer and/or water-soluble coatings therein. Suitable micronutrients include oxides and sulfates of zinc, copper, manganese and iron (column 8, lines 9-15). Agricultural chemicals which affect the performance of plant growth may also be included in finely divided form as diluent fillers. Such agricultural chemicals include herbicides, hexazinone, 2,4-D and atrazine (column 8, lines 16-22). However, none of the working examples of the Moore reference contain a diluent filler. Thus, one skilled in the art seeking to combine the Wynnyk et al reference with the Moore reference would, at best, combine one of the diluent fillers from the Moore reference with the polyol component and/or isocyanate component as described in the examples of the Wynnyk et al reference. Since the Wynnyk *et al* reference additionally includes the organic additive (e.g. the C_{30+} alpha olefin wax),

one skilled in the art would include this or a similar additive along with the diluent filler and either the polyol or the isocyanate. Applicants respectfully submit, however, that this combination is clearly not Applicants' invention.

As previously discussed, a combination of fillers with polyols or of fillers with isocyanates without an organic additive as in the Wynnyk et al reference results in thick pastes which are not suitable for coating fertilizer particles. This is "obvious" as illustrated by Examples 7, 11, 13 and 15 of the present application. The combination of the Wynnyk et al reference and the Moore reference does not fairly suggest the presently claimed invention to one of ordinary skill in the art. The skilled artisan has no insight into the presently claimed invention from this combination of references.

Only after reading the present application does it become "obvious" to proceed in the manner required by the present claim language. Such a perspective does not, however, provide a proper basis for a rejection under 35 U.S.C. § 103(a).

Applicants therefore submit that this rejection is in error and request that it be withdrawn.

It is respectfully requested that the present application be reconsidered in view of the preceding remarks. The allowance of Claims 1-5, 7-11, 13-17, 19-23, 25-29 and 31-35 is respectfully requested.

Respectfully Submitted,

By: _____

N. Denise Brown
Agent for Applicants
Reg. No. 36,097

Bayer MaterialScience LLC
100 Bayer Road
Pittsburgh, PA 15205-9741
(412) 777-3804
FACSIMILE PHONE NUMBER
(412) 777-3902
s:\shared\kgb\7925amfinalDB